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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,948	05/30/2006	Tatsuo Kataoka	1217-061417	8887

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EXAMINER
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ARBES, CARL J

ART UNIT	PAPER NUMBER
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3729

MAIL DATE	DELIVERY MODE
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05/13/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/580,948	<b>Applicant(s)</b> KATAOKA ET AL.
	<b>Examiner</b> C. J. Arbes	<b>Art Unit</b> 3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 5-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicants apparently are concerned with establishing a printed circuit board which has a fine wiring pattern having "pitch widths" of less than 30 microns (Cf. page 3 of the Specification). Applicants form a 1<sup>st</sup> metal layer e.g. Cu, Ni, Cr, Mo, W, Si???, Pd, Ti Va, Fe, Co, Mn, Al, Zn, Sn and Ta (Cf. page 15 of the Specification) on a polyimide film (or a polyester, polyphenylene sulphide, liquid crystal polymer (Cf. page 14)), and a 2<sup>nd</sup> metal layer, e.g. Cu on the 1<sup>st</sup> metal layer. Applicants then use a "micro- etch" to dissolve and/or passivate the metal that forms the base metal layer ( Cf. Specification on Page 21) This etching solution may also contain sulphuric acid/hydrochloric acid mixtures and an aqueous solution of sodium permanganate and potassium hydroxide (for Cr). (Cf. page 22 of the specification) It cannot be understood how an etching solution will take or eliminate some of the remaining metal material and at substantially the time passivate the remaining non –preferred metallic material. Moreover it cannot be understood and applicants do not teach one how or why it is that the etchant responsible for the acts of etching the remaining metal particles will not also

etch/passivate the wiring patterns (which is the necessary or functional part of Applicants' process)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4, assuming that the specification is enabling, is further rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants recite (in claim 1) *inter alia* ... microetching is carried out, and then, the base metal layer is treated with an etching solution, which is capable of dissolving metal and has a function that it can passivate metal that is remaining in trace amounts, to dissolve and remove most of the metal that forms the base metal layer exposed between the wiring patterns and to passivate a trace amount of a residual metal which has not been dissolved by treatment... . It cannot be understood what is intended by Applicants. That is the metes and bounds are not well defined. Applicants have an etching step for production of the wiring pattern. Subsequently Applicants have another etching step which involves "an etching solution" also. What positive step does the recited 2<sup>nd</sup> etchant perform? Does this 2<sup>nd</sup> etchant dissolve the remaining metal? Does this etchant passivate metal? Does this etchant both etch metal and passivate metal? Moreover what does the term "residual" mean in the context of claim 1? Furthermore it is unclear in claim 1 as to what "metal layer of a base film " Applicants are referring or whether the "metal layer" is the same as "the base metal layer". Moreover is the "base

film” the same as the “insulating film” recited in line 2.. Also “the above step” (line 5) lacks a proper antecedent basis.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim1, assuming that the specification is enabling and assuming that the claims are clear and definite, are further rejected under 35 U.S.C. 103(a) as being unpatentable over Cordani (Pat No. 5,207,867); hereinafter Cordani.

Cordani teaches a method for making a printed circuit board which has an initially metal-clad substrate. In an embodiment Cordani teaches etching the metal clad layer and then fabricating printed circuit by a subtractive method , i.e. selective etching away of metal to form a circuitry pattern (Cf. Col. 4). Cordani also teaches reflowing a tin/lead resist rather than etching the resist. (Cf. Col. 5). The etchant is made such as to be effective as to be a metal etchant e.g. on copper and also on exposed insulating material surface to bring about microetching and removing of metallic particles thereby providing the insulative surface with larger electrical resistance.

Claims 1-4, assuming that the Specification is enabling and assuming also that the claims are clear and definite, are further rejected under 35 U.S.C. 102(a) as being anticipated by Yoshiyuki et al (Japan Pat. No. 2003188495) (of Record); hereinafter Yoshiyuki et al. To the extent that Yoshiyuki et al and Applicants' Specifications are not fully understandable (and given the fact that the Examiner has not had the benefit of a

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full English translation of this foreign teaching at this time and further given the fact that Yoshiyuki et al teach forming a metallized polyimide substrate by initially etching a metal coated polyimide film (which metallic coating has a 2<sup>nd</sup> metallic layer) to provide a wiring pattern and etching again with an oxidizing agent e.g. potassium permanganate, potassium dichromate and hydrogen peroxide), it appears that there are different authors in this foreign document than who are applicants of the claimed invention. Sako Takefumi is an author of the prior art teaching and this person is not listed as an applicant in the instant Application. Tatsuo Kataoka and Yutaka Iguchi are applicants in the instant Application but are not listed in the Japanese publication cited herein.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. J. Arbes whose telephone number is 571-272-4563. The examiner can normally be reached on M, T, R and F from 8 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, P. Vo, can be reached on (571) 272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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/C. J. Arbes/  
Primary Examiner, Art Unit 3729